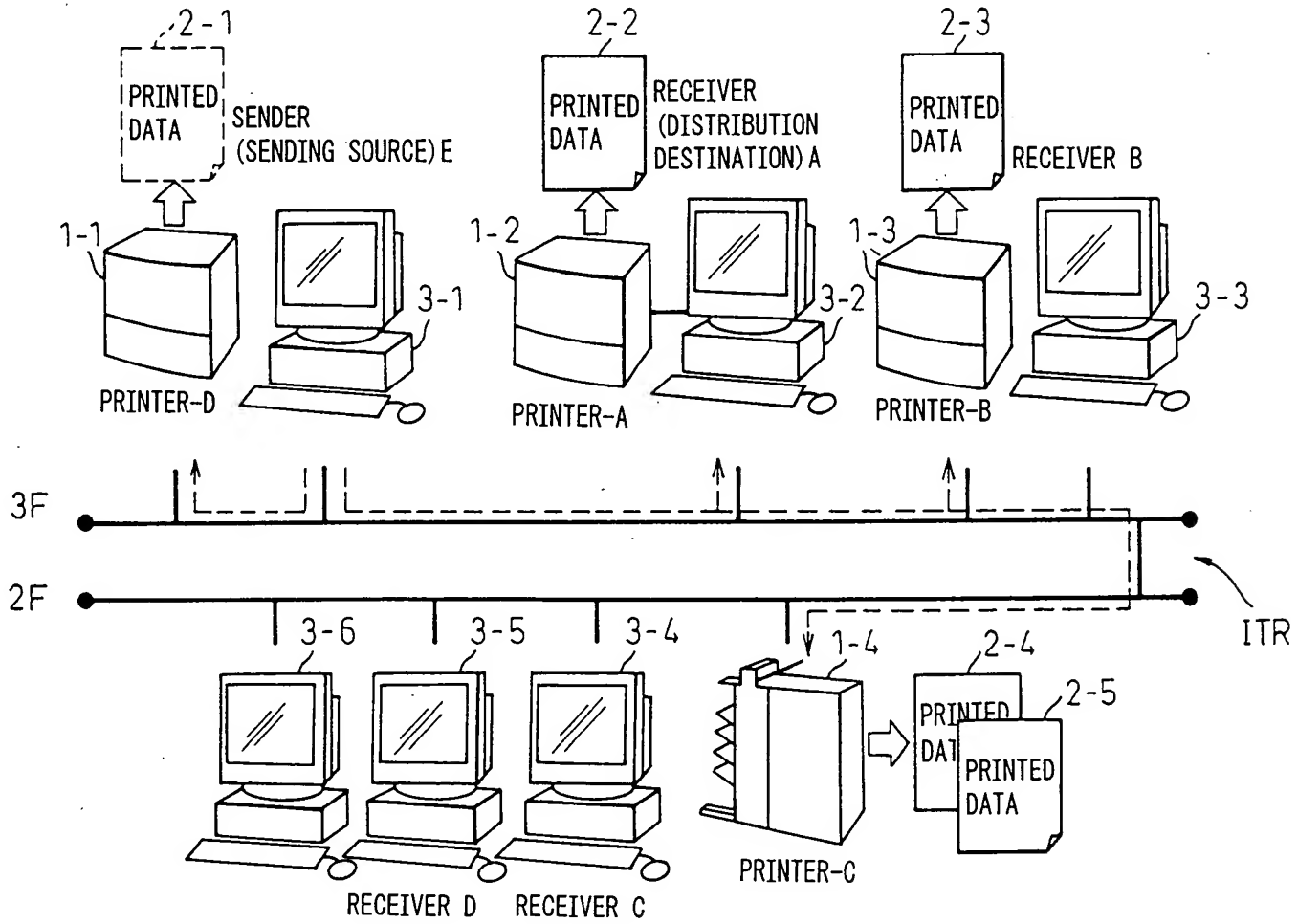
Fig.1


2-1
PRINTED DATA
SENDER (SENDING SOURCE) E
2-2
PRINTED DATA
RECEIVER (DISTRIBUTION DESTINATION) A
2-3
PRINTED DATA
RECEIVER B
1-1
1-2
1-3
3-1
3-2
3-3
PRINTER-D
PRINTER-A
PRINTER-B
3F
2F
ITR
3-6
3-5
3-4
1-4
2-4
2-5
PRINTED DATA
PRINTER-C
RECEIVER D
RECEIVER C

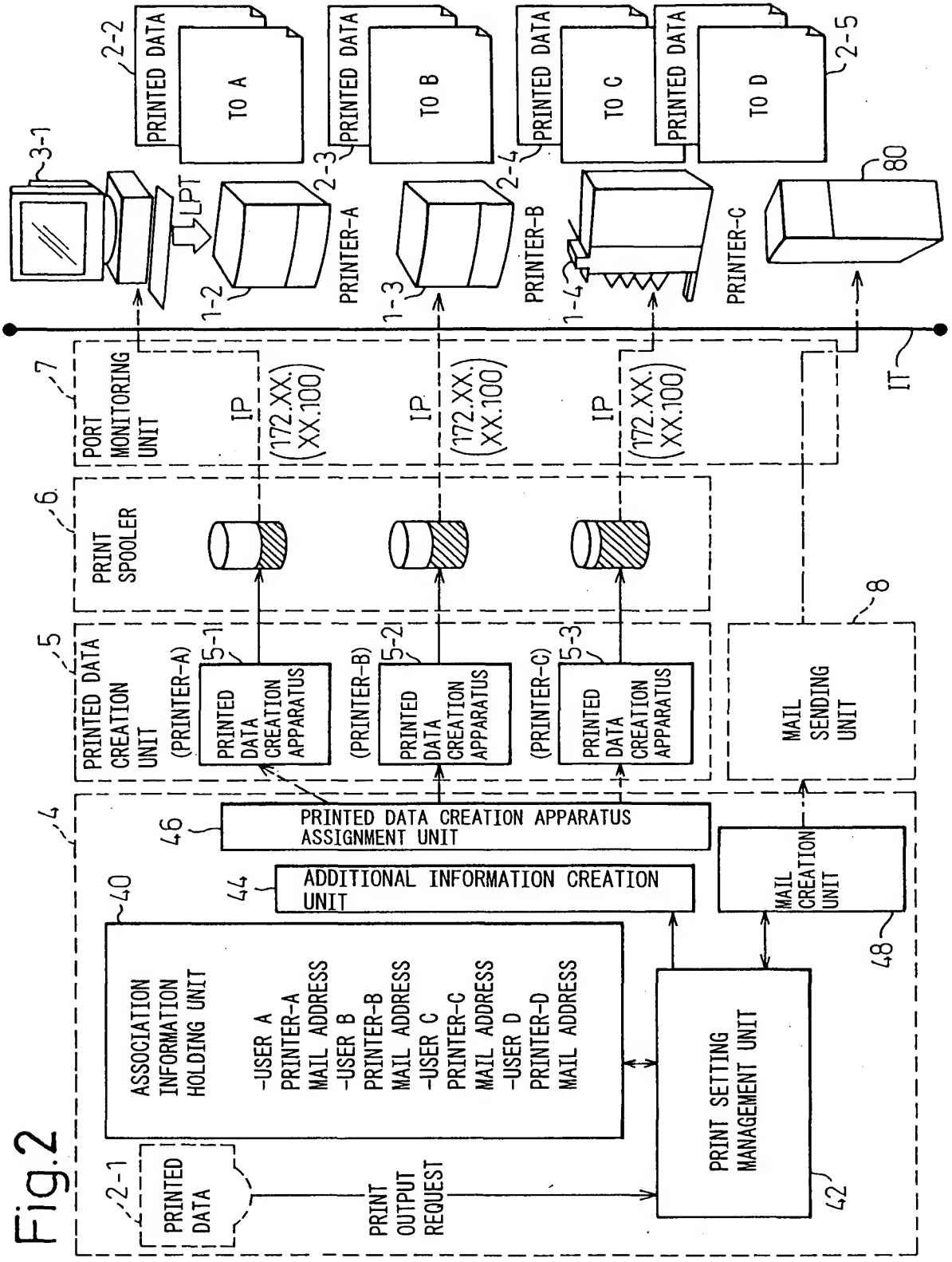


Fig.2
PRINTED DATA
TO A
TO B
TO C
TO D
2-2
2-5
3-1
LPT
2-3
2-4
PRINTER-A
PRINTER-B
PRINTER-C
80
1-2
1-3
1-4
IT
7
PORT MONITORING UNIT
IP (172.XX.XX.100)
6
PRINT SPOOLER
5
PRINTED DATA CREATION UNIT
(PRINTER-A)
5-1
(PRINTER-B)
5-2
(PRINTER-C)
5-3
PRINTED DATA CREATION APPARATUS
8
MAIL SENDING UNIT
4
46
PRINTED DATA CREATION APPARATUS ASSIGNMENT UNIT
44
ADDITIONAL INFORMATION CREATION UNIT
40
ASSOCIATION INFORMATION HOLDING UNIT
-USER A
PRINTER-A
MAIL ADDRESS
-USER B
PRINTER-B
MAIL ADDRESS
-USER C
PRINTER-C
MAIL ADDRESS
-USER D
PRINTER-D
MAIL ADDRESS
MAIL CREATION UNIT
48
PRINT SETTING MANAGEMENT UNIT
42
2-1
PRINTED DATA
PRINT OUTPUT REQUEST

Fig.3A

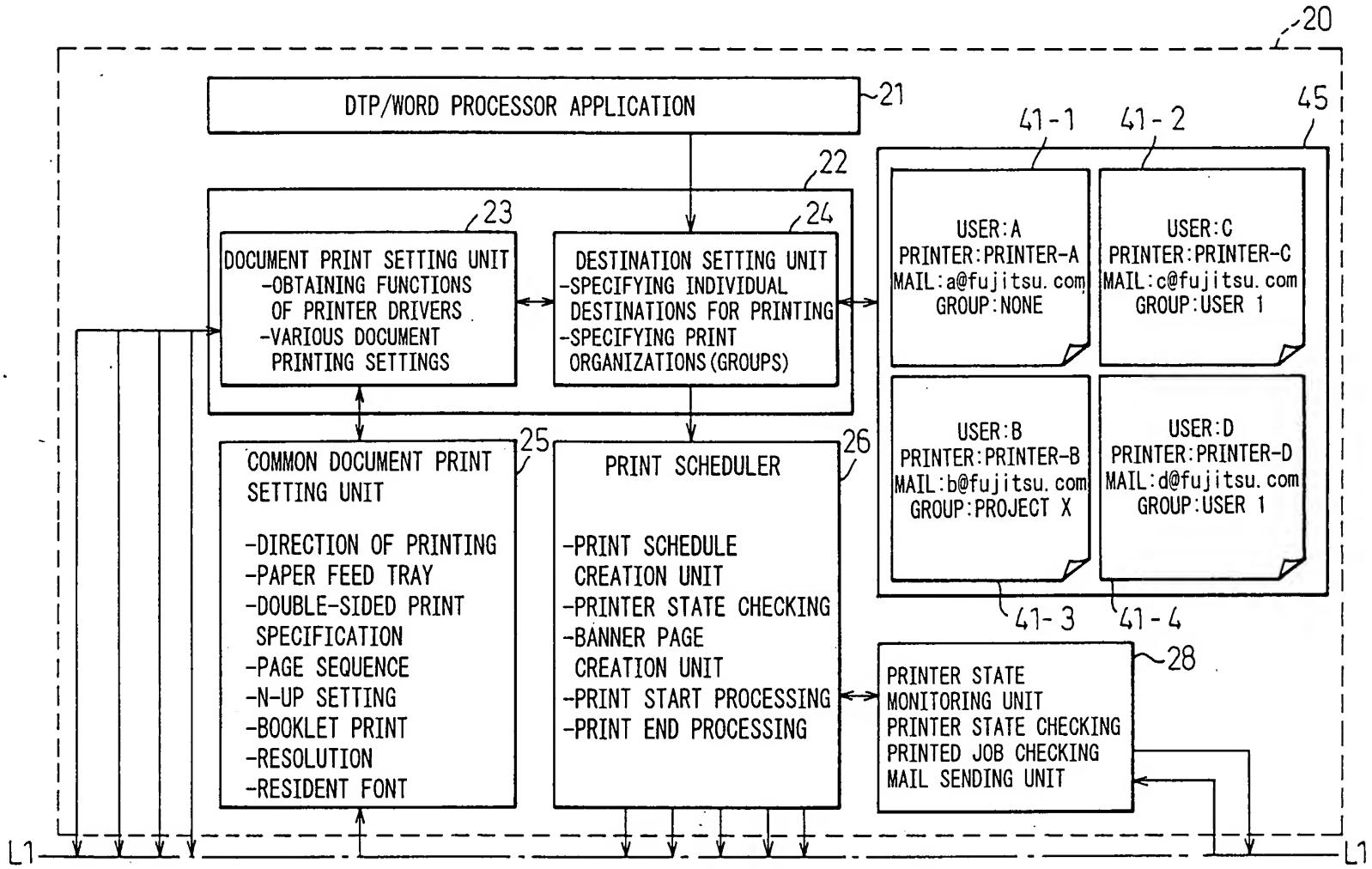

20
DTP/WORD PROCESSOR APPLICATION
21
22
23
DOCUMENT PRINT SETTING UNIT
-OBTAINING FUNCTIONS OF PRINTER DRIVERS
-VARIOUS DOCUMENT PRINTING SETTINGS
24
DESTINATION SETTING UNIT
-SPECIFYING INDIVIDUAL DESTINATIONS FOR PRINTING
-SPECIFYING PRINT ORGANIZATIONS (GROUPS)
25
COMMON DOCUMENT PRINT SETTING UNIT
-DIRECTION OF PRINTING
-PAPER FEED TRAY
-DOUBLE-SIDED PRINT SPECIFICATION
-PAGE SEQUENCE
-N-UP SETTING
-BOOKLET PRINT
-RESOLUTION
-RESIDENT FONT
26
PRINT SCHEDULER
-PRINT SCHEDULE CREATION UNIT
-PRINTER STATE CHECKING
-BANNER PAGE CREATION UNIT
-PRINT START PROCESSING
-PRINT END PROCESSING
45
41-1
USER:A
PRINTER:PRINTER-A
MAIL:a@fujitsu.com
GROUP:NONE
41-2
USER:C
PRINTER:PRINTER-C
MAIL:c@fujitsu.com
GROUP:USER 1
41-3
USER:B
PRINTER:PRINTER-B
MAIL:b@fujitsu.com
GROUP:PROJECT X
41-4
USER:D
PRINTER:PRINTER-D
MAIL:d@fujitsu.com
GROUP:USER 1
28
PRINTER STATE MONITORING UNIT
PRINTER STATE CHECKING
PRINTED JOB CHECKING
MAIL SENDING UNIT
L1
L1

Fig.3B

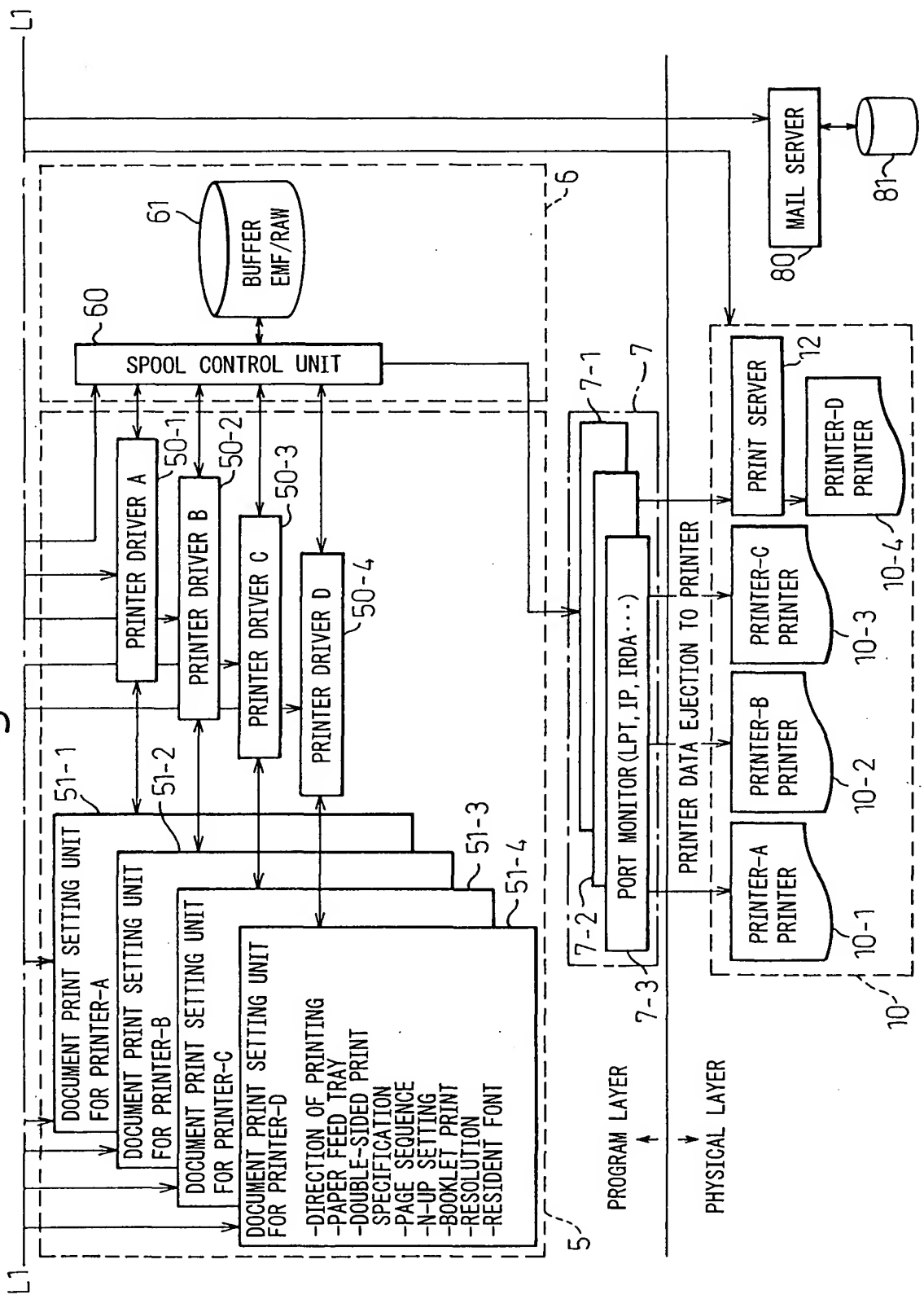

L1
5
6
60
61
BUFFER EMF/RAW
SPOOL CONTROL UNIT
PRINTER DRIVER A
PRINTER DRIVER B
PRINTER DRIVER C
PRINTER DRIVER D
50-1
50-2
50-3
50-4
51-1
51-2
51-3
51-4
DOCUMENT PRINT SETTING UNIT FOR PRINTER-A
DOCUMENT PRINT SETTING UNIT FOR PRINTER-B
DOCUMENT PRINT SETTING UNIT FOR PRINTER-C
DOCUMENT PRINT SETTING UNIT FOR PRINTER-D
-DIRECTION OF PRINTING
-PAPER FEED TRAY
-DOUBLE-SIDED PRINT SPECIFICATION
-PAGE SEQUENCE
-N-UP SETTING
-BOOKLET PRINT
-RESOLUTION
-RESIDENT FONT
PROGRAM LAYER
PHYSICAL LAYER
7
7-1
7-2
7-3
PORT MONITOR(LPT, IP, IRDA···)
PRINTER DATA EJECTION TO PRINTER
MAIL SERVER
80
81
PRINT SERVER
12
PRINTER-A PRINTER
PRINTER-B PRINTER
PRINTER-C PRINTER
PRINTER-D PRINTER
10-1
10-2
10-3
10-4
10

Fig. 4

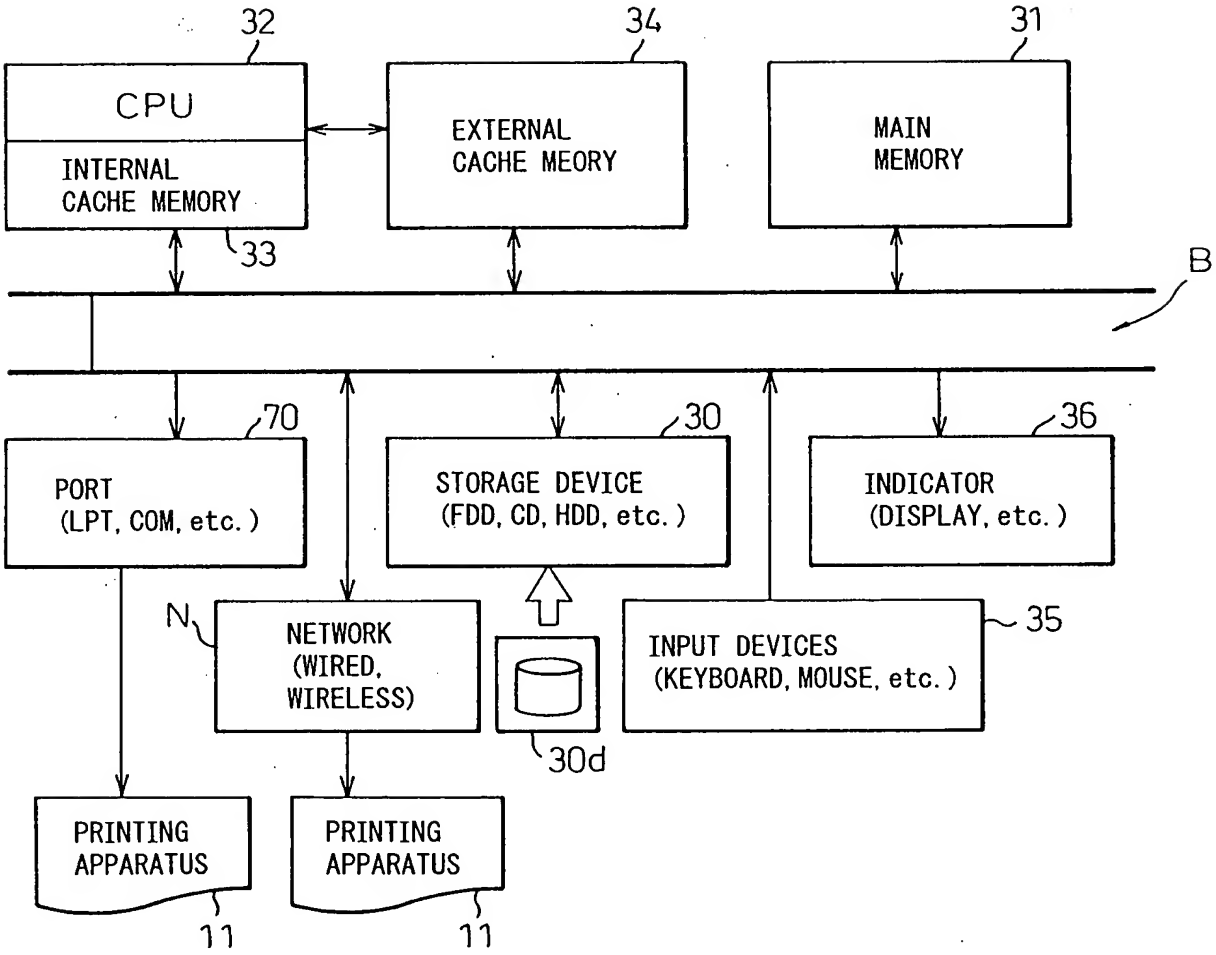

32
34
31
CPU
INTERNAL CACHE MEMORY
33
EXTERNAL CACHE MEORY
MAIN MEMORY
B
70
30
36
PORT (LPT, COM, etc.)
STORAGE DEVICE (FDD, CD, HDD, etc.)
INDICATOR (DISPLAY, etc.)
N
NETWORK (WIRED, WIRELESS)
30d
INPUT DEVICES (KEYBOARD, MOUSE, etc.)
35
PRINTING APPARATUS
11
PRINTING APPARATUS
11

Fig.5

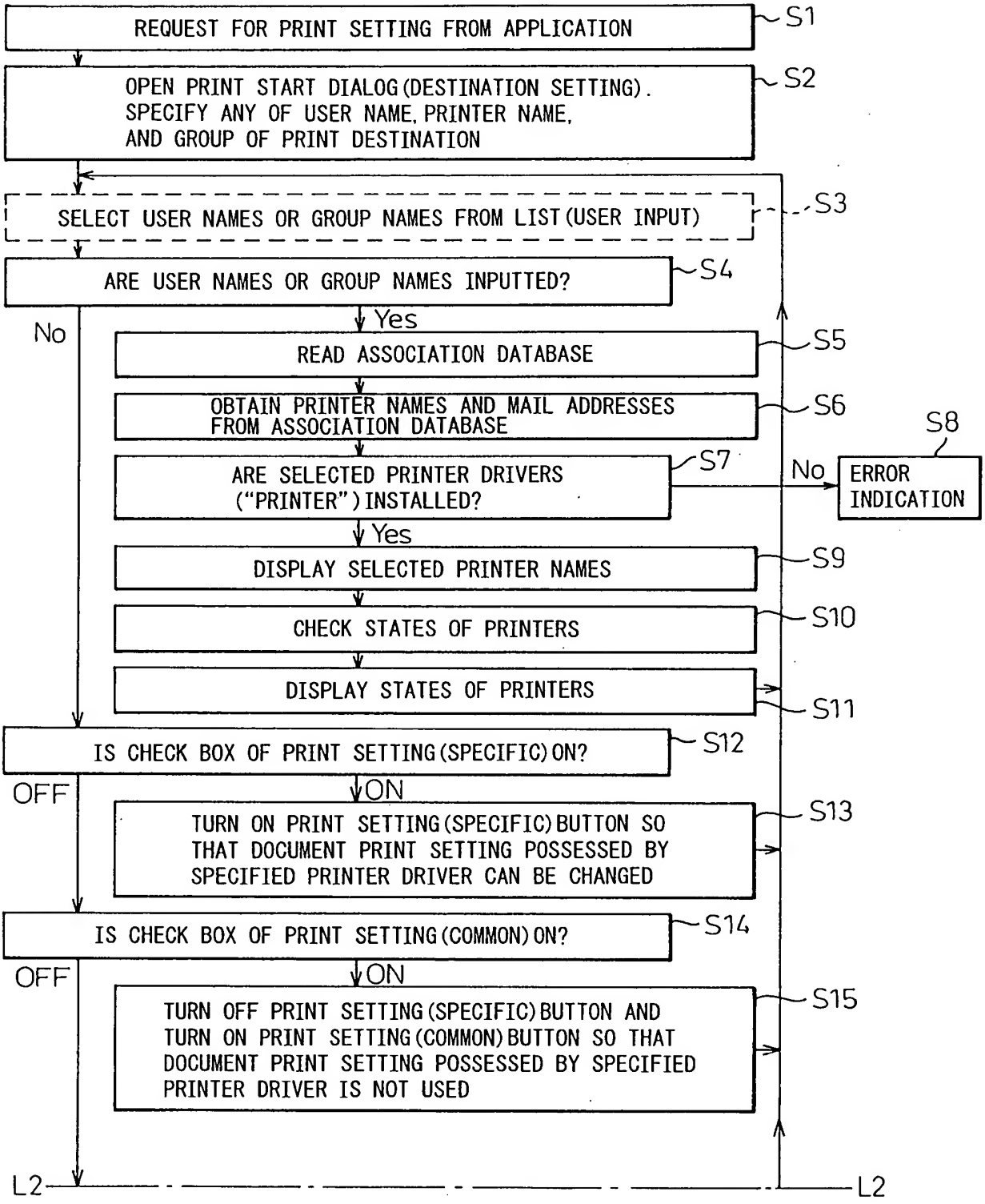

REQUEST FOR PRINT SETTING FROM APPLICATION
S1
OPEN PRINT START DIALOG (DESTINATION SETTING). SPECIFY ANY OF USER NAME, PRINTER NAME, AND GROUP OF PRINT DESTINATION
S2
SELECT USER NAMES OR GROUP NAMES FROM LIST (USER INPUT)
S3
ARE USER NAMES OR GROUP NAMES INPUTTED?
S4
No
Yes
READ ASSOCIATION DATABASE
S5
OBTAIN PRINTER NAMES AND MAIL ADDRESSES FROM ASSOCIATION DATABASE
S6
ARE SELECTED PRINTER DRIVERS ("PRINTER") INSTALLED?
S7
No
S8
ERROR INDICATION
Yes
DISPLAY SELECTED PRINTER NAMES
S9
CHECK STATES OF PRINTERS
S10
DISPLAY STATES OF PRINTERS
S11
IS CHECK BOX OF PRINT SETTING (SPECIFIC) ON?
S12
OFF
ON
TURN ON PRINT SETTING (SPECIFIC) BUTTON SO THAT DOCUMENT PRINT SETTING POSSESSED BY SPECIFIED PRINTER DRIVER CAN BE CHANGED
S13
IS CHECK BOX OF PRINT SETTING (COMMON) ON?
S14
OFF
ON
TURN OFF PRINT SETTING (SPECIFIC) BUTTON AND TURN ON PRINT SETTING (COMMON) BUTTON SO THAT DOCUMENT PRINT SETTING POSSESSED BY SPECIFIED PRINTER DRIVER IS NOT USED
S15
L2
L2

Fig.6

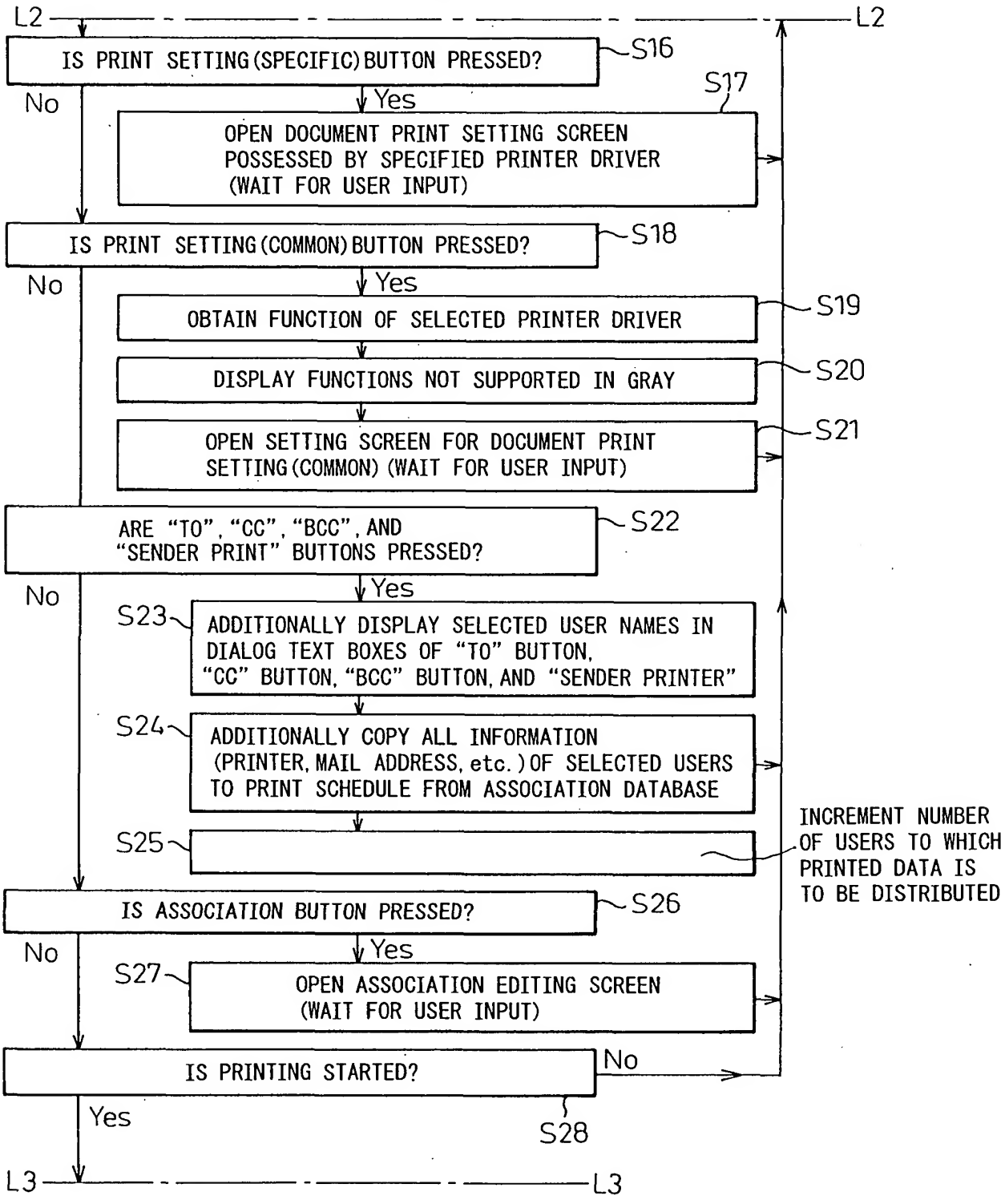

L2
L2
IS PRINT SETTING (SPECIFIC) BUTTON PRESSED?
S16
No
Yes
S17
OPEN DOCUMENT PRINT SETTING SCREEN POSSESSED BY SPECIFIED PRINTER DRIVER (WAIT FOR USER INPUT)
IS PRINT SETTING (COMMON) BUTTON PRESSED?
S18
No
Yes
OBTAIN FUNCTION OF SELECTED PRINTER DRIVER
S19
DISPLAY FUNCTIONS NOT SUPPORTED IN GRAY
S20
OPEN SETTING SCREEN FOR DOCUMENT PRINT SETTING (COMMON) (WAIT FOR USER INPUT)
S21
ARE "TO", "CC", "BCC", AND "SENDER PRINT" BUTTONS PRESSED?
S22
No
Yes
S23
ADDITIONALLY DISPLAY SELECTED USER NAMES IN DIALOG TEXT BOXES OF "TO" BUTTON, "CC" BUTTON, "BCC" BUTTON, AND "SENDER PRINTER"
S24
ADDITIONALLY COPY ALL INFORMATION (PRINTER, MAIL ADDRESS, etc.) OF SELECTED USERS TO PRINT SCHEDULE FROM ASSOCIATION DATABASE
S25
INCREMENT NUMBER OF USERS TO WHICH PRINTED DATA IS TO BE DISTRIBUTED
IS ASSOCIATION BUTTON PRESSED?
S26
No
Yes
S27
OPEN ASSOCIATION EDITING SCREEN (WAIT FOR USER INPUT)
IS PRINTING STARTED?
No
S28
Yes
L3
L3

Fig. 7

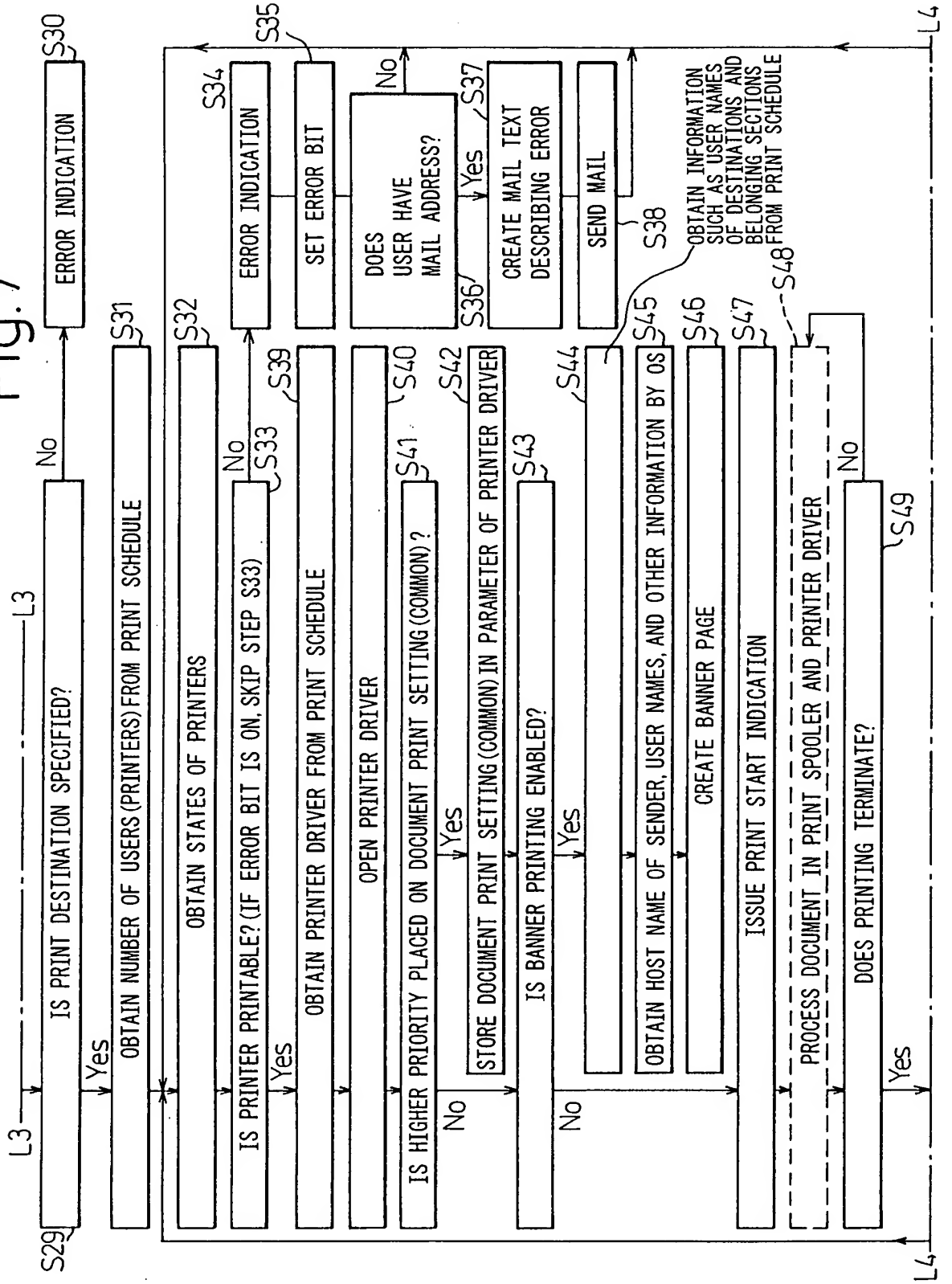

L3
IS PRINT DESTINATION SPECIFIED?
S29
No
ERROR INDICATION
S30
Yes
OBTAIN NUMBER OF USERS (PRINTERS) FROM PRINT SCHEDULE
S31
OBTAIN STATES OF PRINTERS
S32
IS PRINTER PRINTABLE? (IF ERROR BIT IS ON, SKIP STEP S33)
S33
No
ERROR INDICATION
S34
SET ERROR BIT
S35
DOES USER HAVE MAIL ADDRESS?
S36
No
Yes
CREATE MAIL TEXT DESCRIBING ERROR
S37
SEND MAIL
S38
Yes
OBTAIN PRINTER DRIVER FROM PRINT SCHEDULE
S39
OPEN PRINTER DRIVER
S40
IS HIGHER PRIORITY PLACED ON DOCUMENT PRINT SETTING (COMMON)?
S41
Yes
No
STORE DOCUMENT PRINT SETTING (COMMON) IN PARAMETER OF PRINTER DRIVER
S42
IS BANNER PRINTING ENABLED?
S43
Yes
No
OBTAIN HOST NAME OF SENDER, USER NAMES, AND OTHER INFORMATION BY OS
S44
OBTAIN INFORMATION SUCH AS USER NAMES OF DESTINATIONS AND BELONGING SECTIONS FROM PRINT SCHEDULE
S45
CREATE BANNER PAGE
S46
ISSUE PRINT START INDICATION
S47
PROCESS DOCUMENT IN PRINT SPOOLER AND PRINTER DRIVER
S48
DOES PRINTING TERMINATE?
S49
No
Yes
L4

Fig.8

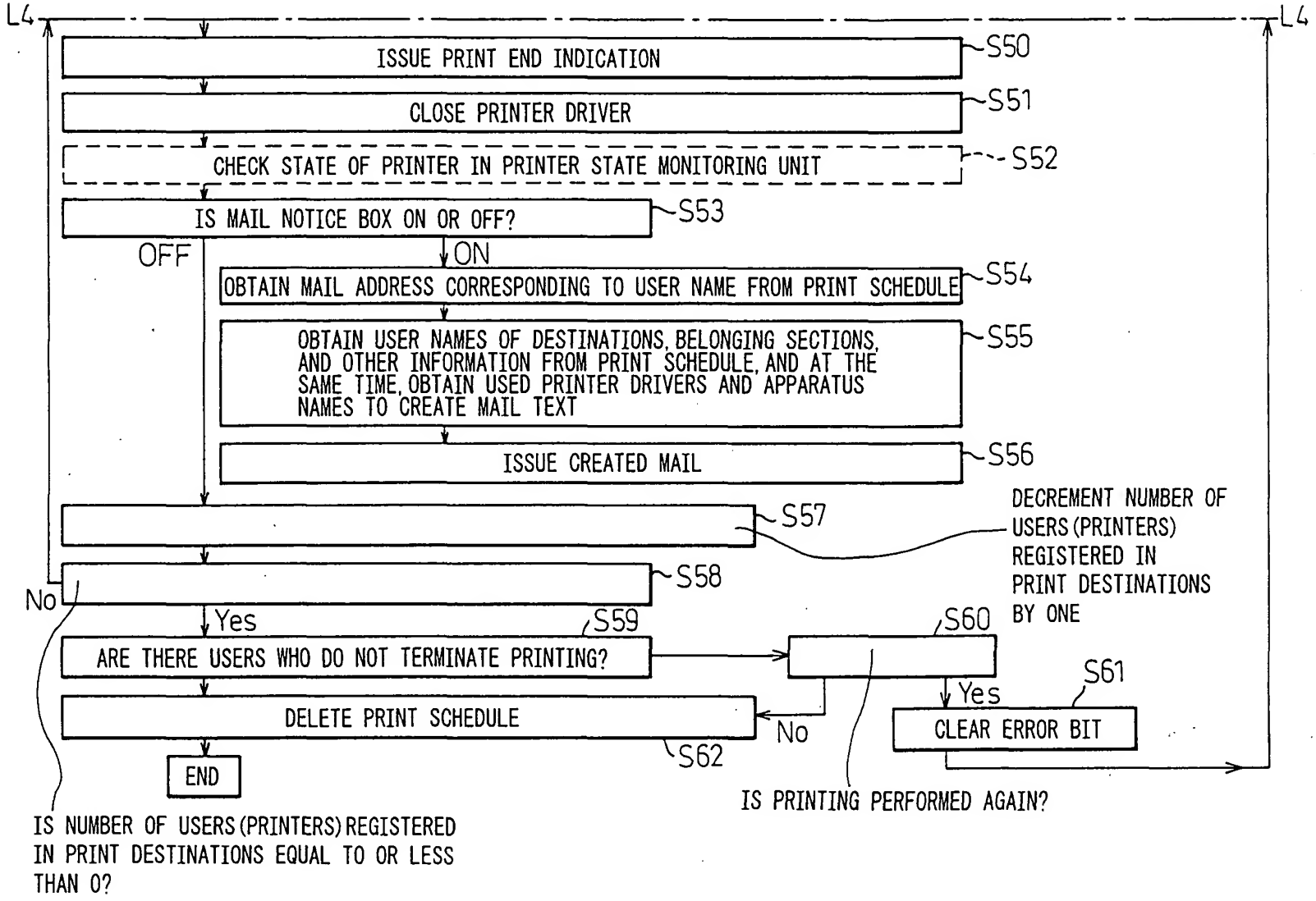

L4
L4
ISSUE PRINT END INDICATION
S50
CLOSE PRINTER DRIVER
S51
CHECK STATE OF PRINTER IN PRINTER STATE MONITORING UNIT
S52
IS MAIL NOTICE BOX ON OR OFF?
S53
OFF
ON
OBTAIN MAIL ADDRESS CORRESPONDING TO USER NAME FROM PRINT SCHEDULE
S54
OBTAIN USER NAMES OF DESTINATIONS, BELONGING SECTIONS, AND OTHER INFORMATION FROM PRINT SCHEDULE, AND AT THE SAME TIME, OBTAIN USED PRINTER DRIVERS AND APPARATUS NAMES TO CREATE MAIL TEXT
S55
ISSUE CREATED MAIL
S56
S57
DECREMENT NUMBER OF USERS (PRINTERS) REGISTERED IN PRINT DESTINATIONS BY ONE
S58
No
Yes
S59
ARE THERE USERS WHO DO NOT TERMINATE PRINTING?
S60
S61
Yes
No
DELETE PRINT SCHEDULE
CLEAR ERROR BIT
S62
END
IS NUMBER OF USERS (PRINTERS) REGISTERED IN PRINT DESTINATIONS EQUAL TO OR LESS THAN 0?
IS PRINTING PERFORMED AGAIN?

Fig.9

BASIC INFORMATION	
TITLE	MINUTES OF MEETING
FILE NAME	gijiroku.doc
PRINT DATE	JANUARY 1, 2000
SENDER NAME	TARO FUJITSU
NUMBER OF PRINT STAGES	5

DESTINATION USER NAME		ATTRIBUTE INFORMATION						BANNER PRINTING	UN-PROCESSED		
NO.		BELONGING SECTION	PRINTER DRIVER	PRINTER STATE	PRINT SETTING	MAIL SENDING	E-MAIL ADDRESS		JOB STATE	ERROR BIT	ACTUAL PROCESSING CONTENTS
1	A	XXX SECTION OF XXX AFFAIRS DEPARTMENT	PRINTER-A	BUSY	DOCUMENT PRINT SETTING (COMMON) IS USED	YES	a@fujitsu.com	YES	BUSY	OFF	PRINTED DATA IS BEING TRANSFERRED
2	Z	XXX SECTION OF XXX AFFAIRS DEPARTMENT	PRINTER-A	BUSY	DOCUMENT PRINT SETTING (COMMON) IS USED	YES	z@fujitsu.com	YES		OFF	WAIT
3	B	YYY SECTION OF YYY AFFAIRS DEPARTMENT	PRINTER-B	READY	DOCUMENT PRINT SETTING OF DRIVER IS USED	YES	b@fujitsu.com	YES		OFF	BANNER PAGE IS BEING CREATED
4	C	C SECTION OF C AFFAIRS DEPARTMENT	PRINTER-C	OUT OF PAPER	DOCUMENT PRINT SETTING (COMMON) IS USED	YES	c@fujitsu.com	NO		ON	WAITING FOR RECOVERY OF PRINTER
5	D	Z SECTION OF Z AFFAIRS DEPARTMENT	PRINTER-D	READY	DOCUMENT PRINT SETTING (COMMON) IS USED	YES	d@fujitsu.com	NO	BUSY	OFF	PRINTED DATA HAS BEEN TRANSFERRED. WAITING FOR COMPLETION OF PRINTING

UN-PROCESSED

UN-PROCESSED

Fig.10

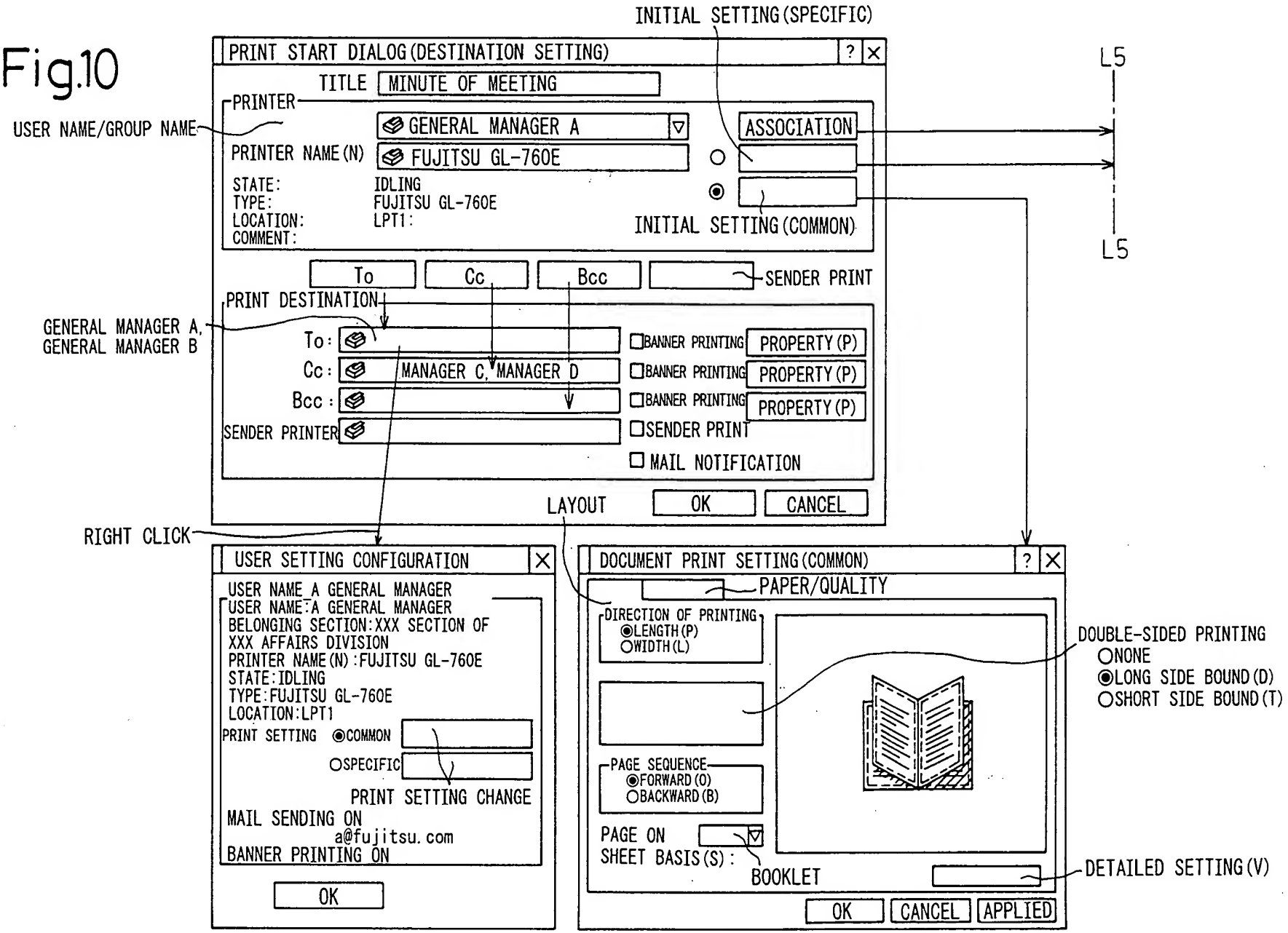

INITIAL SETTING (SPECIFIC)
PRINT START DIALOG (DESTINATION SETTING)
TITLE
MINUTE OF MEETING
PRINTER
USER NAME/GROUP NAME
GENERAL MANAGER A
ASSOCIATION
PRINTER NAME (N)
FUJITSU GL-760E
STATE:
IDLING
TYPE:
FUJITSU GL-760E
LOCATION:
LPT1:
COMMENT:
INITIAL SETTING (COMMON)
L5
L5
To
Cc
Bcc
SENDER PRINT
PRINT DESTINATION
GENERAL MANAGER A,
GENERAL MANAGER B
To:
Cc:
MANAGER C, MANAGER D
Bcc:
SENDER PRINTER
BANNER PRINTING
PROPERTY (P)
BANNER PRINTING
PROPERTY (P)
BANNER PRINTING
PROPERTY (P)
SENDER PRINT
MAIL NOTIFICATION
LAYOUT
OK
CANCEL
RIGHT CLICK
USER SETTING CONFIGURATION
USER NAME A GENERAL MANAGER
USER NAME:A GENERAL MANAGER
BELONGING SECTION:XXX SECTION OF
XXX AFFAIRS DIVISION
PRINTER NAME (N):FUJITSU GL-760E
STATE:IDLING
TYPE:FUJITSU GL-760E
LOCATION:LPT1
PRINT SETTING
COMMON
SPECIFIC
PRINT SETTING CHANGE
MAIL SENDING ON
a@fujitsu.com
BANNER PRINTING ON
OK
DOCUMENT PRINT SETTING (COMMON)
PAPER/QUALITY
DIRECTION OF PRINTING
LENGTH (P)
WIDTH (L)
DOUBLE-SIDED PRINTING
NONE
LONG SIDE BOUND (D)
SHORT SIDE BOUND (T)
PAGE SEQUENCE
FORWARD (O)
BACKWARD (B)
PAGE ON
SHEET BASIS (S):
BOOKLET
DETAILED SETTING (V)
OK
CANCEL
APPLIED

Fig.11

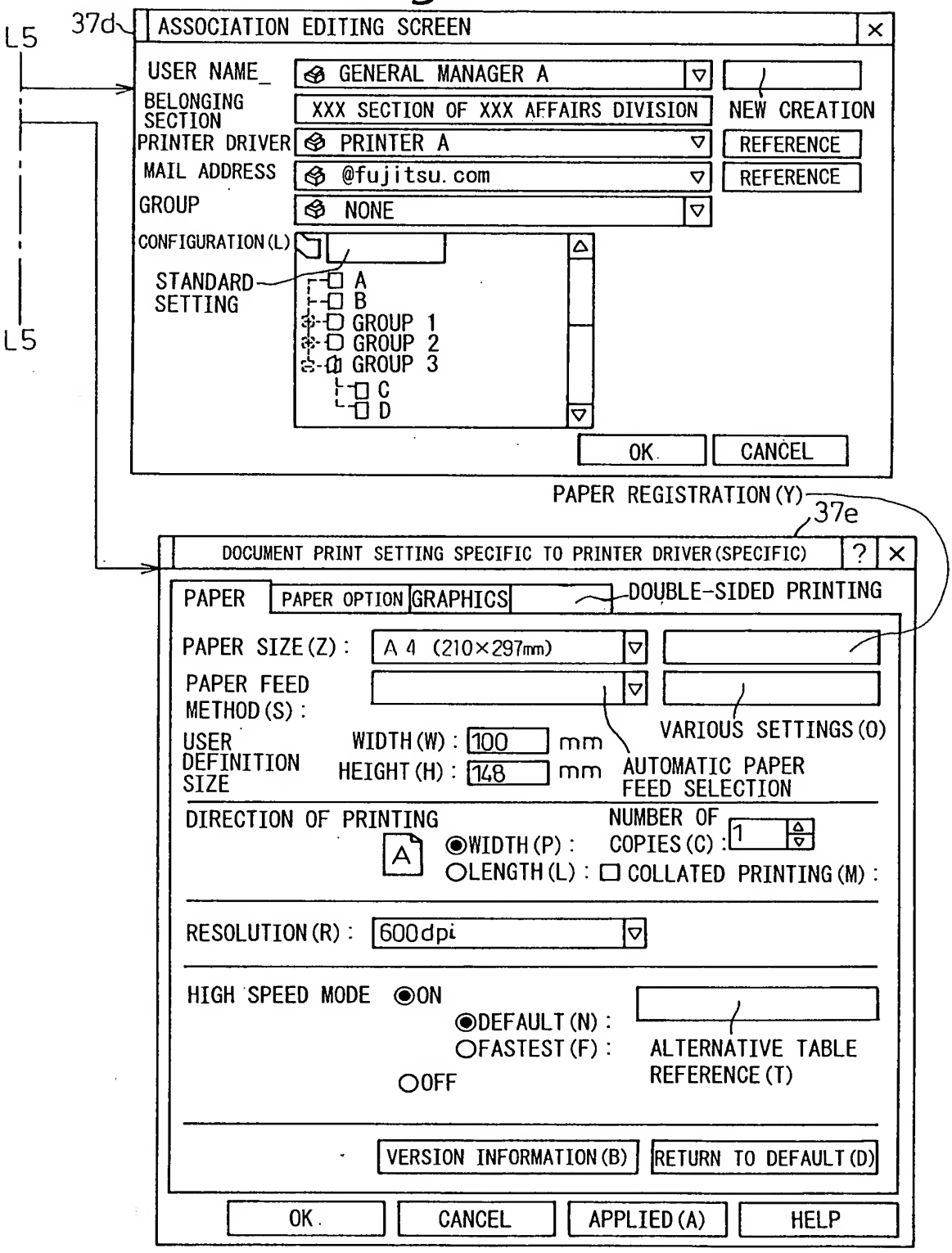
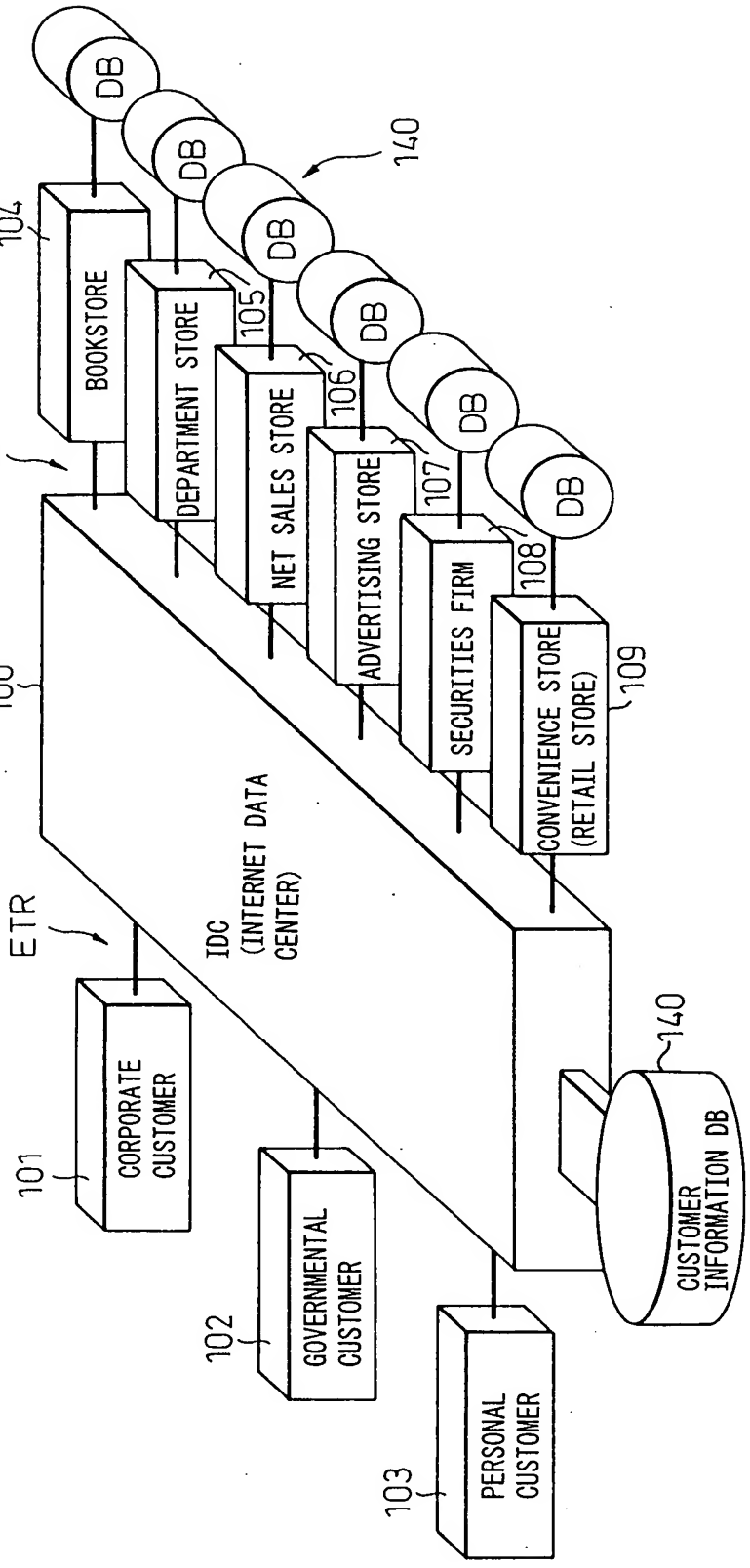

L5
37d
ASSOCIATION EDITING SCREEN
USER NAME_
GENERAL MANAGER A
BELONGING SECTION
XXX SECTION OF XXX AFFAIRS DIVISION
NEW CREATION
PRINTER DRIVER
PRINTER A
REFERENCE
MAIL ADDRESS
@fujitsu.com
REFERENCE
GROUP
NONE
CONFIGURATION(L)
STANDARD SETTING
A
B
GROUP 1
GROUP 2
GROUP 3
C
D
OK
CANCEL
L5
PAPER REGISTRATION(Y)
37e
DOCUMENT PRINT SETTING SPECIFIC TO PRINTER DRIVER(SPECIFIC)
PAPER
PAPER OPTION
GRAPHICS
DOUBLE-SIDED PRINTING
PAPER SIZE(Z):
A 4 (210×297mm)
PAPER FEED METHOD(S):
VARIOUS SETTINGS(O)
USER DEFINITION SIZE
WIDTH(W): 100 mm
HEIGHT(H): 148 mm
AUTOMATIC PAPER FEED SELECTION
DIRECTION OF PRINTING
WIDTH(P):
LENGTH(L):
NUMBER OF COPIES(C): 1
COLLATED PRINTING(M):
RESOLUTION(R):
600dpi
HIGH SPEED MODE
ON
DEFAULT(N):
FASTEST(F):
OFF
ALTERNATIVE TABLE REFERENCE(T)
VERSION INFORMATION(B)
RETURN TO DEFAULT(D)
OK
CANCEL
APPLIED(A)
HELP

Fig.12


DB
DB
DB
DB
DB
DB
DB
140
104
BOOKSTORE
105
DEPARTMENT STORE
106
NET SALES STORE
107
ADVERTISING STORE
108
SECURITIES FIRM
109
CONVENIENCE STORE
(RETAIL STORE)
ETR
ETR
100
IDC
(INTERNET DATA
CENTER)
101
CORPORATE
CUSTOMER
102
GOVERNMENTAL
CUSTOMER
103
PERSONAL
CUSTOMER
140
CUSTOMER
INFORMATION DB